

ALGORITHM FOR EMERGENCY CARDIAC CARE

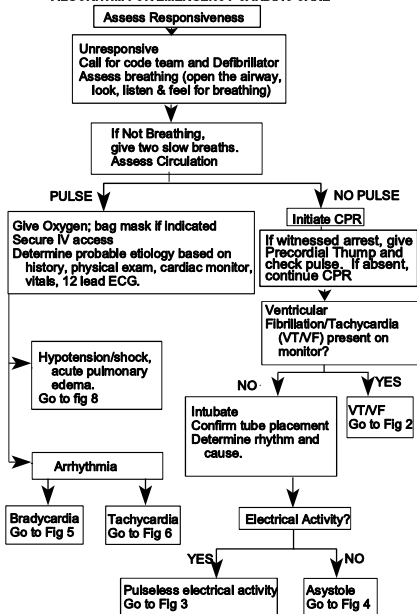
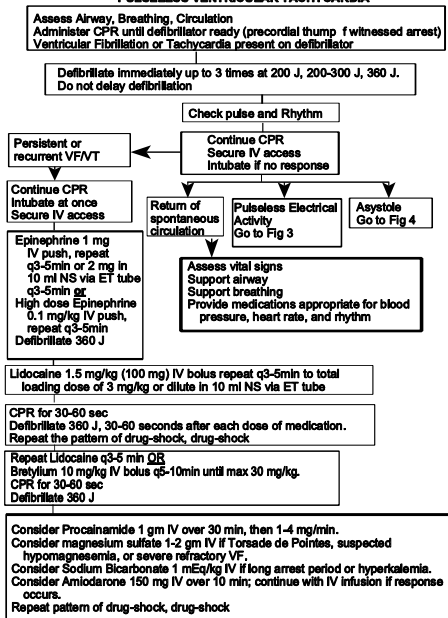


Fig 1 - Algorithm for Adult Emergency Cardiac Care

ALGORITHM FOR VENTRICULAR FIBRILLATION AND PULSELESS VENTRICULAR TACHYCARDIA



Note: Epinephrine, lidocaine, atropine may be given via endotracheal tube at 2-2.5 times the IV dose. Dilute in 10 cc of saline.
After each intravenous dose, give 20-30 mL bolus of IV fluid & elevate extremity.

Fig 2 - Ventricular Fibrillation & Pulseless Ventricular Tachycardia

ALGORITHM FOR PULSELESS ELECTRICAL ACTIVITY

Pulseless Electrical Activity includes:

Electromechanical dissociation (EMD)

Pseudo-EMD

Idioventricular rhythms

Ventricular escape rhythms

Bradyasystolic rhythms

Postdefibrillation idioventricular rhythms

**Initiate CPR, secure IV access, intubate, assess pulse.
Doppler ultrasound assessment of blood flow may be useful**

Treat Underlying Cause::

Hypoxia (ventilate)

Hypovolemia (infuse volume)

Pericardial tamponade (pericardiocentesis)

Tension pneumothorax (needle decompression)

Pulmonary embolism (thrombectomy, thrombolytics)

Drug overdose with tricyclics, digoxin, beta or calcium blockers

Hyperkalemia or hypokalemia

Acidosis (bicarbonate)

Myocardial infarction (thrombolytics)

Hypothermia (active rewarming)

**Epinephrine 1.0 mg IV bolus q3-5 min or high dose
epinephrine 0.1 mg/kg IV push q3-5 min; may give via
ET tube.
Continue CPR**

**If absolute bradycardia (<60 beats/min) or relative
bradycardia, give atropine 1 mg IV, q3-5 min, up to total
of 0.04 mg/kg
Consider bicarbonate, 1 mEq/kg IV (1-2 amp, 44 mEq/amp),
if hyperkalemia or other indications.**

Fig 3 • Pulseless Electrical Activity

ALGORITHM FOR ASYSTOLE

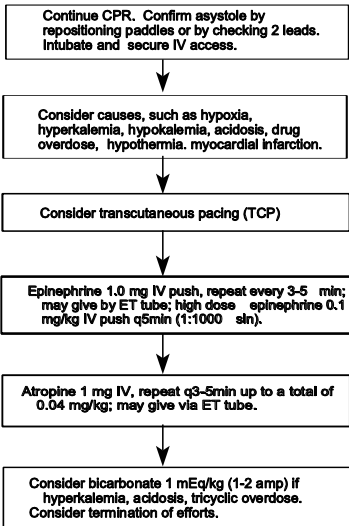


Fig 4 - Asystole

ALGORITHM FOR BRADYCARDIA

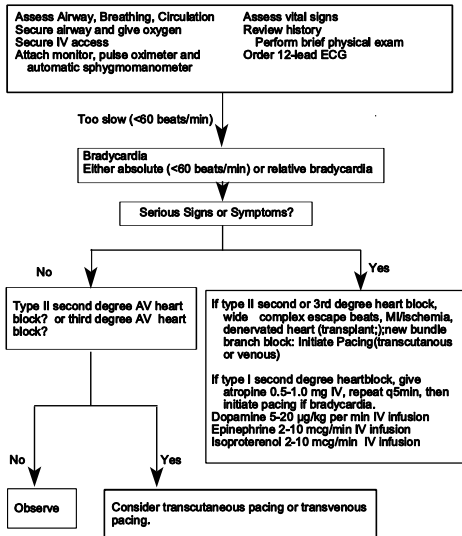


Fig 5 - Bradycardia (with patient not in cardiac arrest).

ALGORITHM FOR TACHYCARDIA

Assess Airway, Breathing, Circulation, Assess vitals, secure airway.
Review history and examine patient.
Give 100% oxygen, Secure IV access.
Attach ECG monitor, pulse oximeter, blood pressure monitor.
Order 12-lead ECG, portable chest x-ray.

UNSTABLE, with serious Signs or Symptoms?
Unstable includes, hypotension, heart failure, chest pain, myocardial infarction, decreased mental status, dyspnea

IMMEDIATE CARDIOVERSION

Atrial flutter 50 J, paroxysmal supraventricular tachycardia 50 J, atrial fibrillation 100 J, monomorphic ventricular tachycardia 100 J, polymorphic V tach 200 J.
Premedicate with midazolam (Versed) 2-5 mg IVP when possible.

Yes

No or borderline

Atrial fibrillation
Atrial flutter

Determine Etiology: Hypoxia, Ischemia, MI, pulmonary embolus, hyperthyroidism, electrolyte abnormality, theophylline, inotropes.

Control Rate: Esmolol, Propranolol, Verapamil, Diltiazem, Digoxin.

Cardioversion of atrial fibrillation to sinus rhythm:
If less than 3 days and rate controlled:
Procainamide or quinidine, followed by Cardioversion
If more than 3 days: Coumadin for 3 weeks; control rate, start antiarrhythmic agent, then electrical cardioversion.

Paroxysmal supraventricular narrow complex tachycardia (PSVT)

Vagal maneuvers:
Carotid sinus massage if no bruits

Adenosine
6 mg, rapid IV push over 1-3 sec

1-2 min

Wide-complex tachycardia of uncertain type

If uncertain if V tach, give Adenosine 6 mg rapid IV push over 1-3 sec

1-2 min

Adenosine
12 mg, rapid IV push over 1-3 s (may repeat once in 1-2 min)

Ventricular tachycardia (VT)

Lidocaine
1-1.5 mg/kg IV push

5-10 min

Lidocaine
0.5-0.75 mg/kg IV push, max total 3 mg/kg.

Torsade de pointes (polymorphic VT)

Correct underlying cause: Hypokalemia, drug overdose (tricyclic, phenothiazine antiarrhythmic class I, Ia, Ib, Ic, III)

Fig 6 Tachycardia

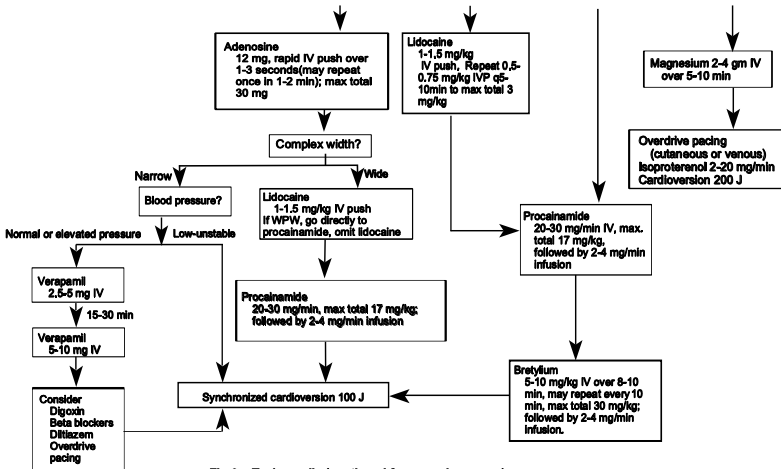


Fig 6. - Tachycardia (continued from previous page)

ALGORITHM FOR STABLE TACHYCARDIA

Stable tachycardia with serious signs and symptoms related to the tachycardia. Patient not in cardiac arrest.

If ventricular rate is >150 beats/min, prepare for immediate cardioversion. Immediate cardioversion is generally not needed for rates <150 beats/min. Treatment of Stable Patients is based on Arrhythmia Type:

V-Tach: Lidocaine 1-1.5 mg/kg IVP, then 0.5-0.75 mg/kg q5-10min to max total 3 mg/kg. If no response, give Procainamide 20-30 mg/min to max total 17 mg/kg, or Bretylium 5-10 mg/kg over 8-10minutes, q10min to max total 30 mg/kg.

Paroxysmal Supraventricular Tachycardia: Carotid sinus pressure if bruits absent, then adenosine 6 mg rapid IVP, followed by 12 mg rapid IVP x 2 doses to max total 30 mg. If no response, verapamil 2.5-5.0 mg IVP; may repeat dose with 5-10 mg IVP if adequate blood pressure; or Esmolol 500 mcg/kg IV over 1 min, then 50 mcg/kg/min IV infusion, and titrate up to 200 mcg/kg/min IV infusion.

Atrial Fibrillation/Flutter: Digoxin 0.5 mg IVP followed by 0.25 mg IVP q4h x 2-4 doses for rate control, then procainamide 20-30 mg/min IV to total max 17 mg/kg, followed by 2-4 mg/min IV infusion; or quinaglute 15 mg/kg IV over 4-6h, followed by 0.6-0.8 mg/kg/h IV infusion OR Diltiazem 0.25 mg/kg IV over 2 min, then 5-15 mg/h IV infusion.

Check Oxygen saturation, Suction device, Intubation equipment. Secure IV access

Premedicate whenever possible with Midazolam (Versed) 2-5 mg IVP or sodium pentothal 2 mg/kg rapid IVP

Synchronized cardioversion	
Atrial flutter	50 J
PSVT	50 J
Atrial	100 J
Monomorphic V-tach	100 J
Polymorphic V tach	200 J

Fig 7 - Stable Tachycardia (not in cardiac arrest)

ALGORITHM FOR HYPOTENSION, SHOCK, AND ACUTE PULMONARY EDEMA

Signs and symptoms of congestive heart failure, acute pulmonary edema.

Assess ABC's, secure airway, administer oxygen; secure IV access. Monitor ECG, pulse oximeter, blood pressure
Check vital signs, review history, and examine patient. Order 12-lead ECG, portable chest X-ray

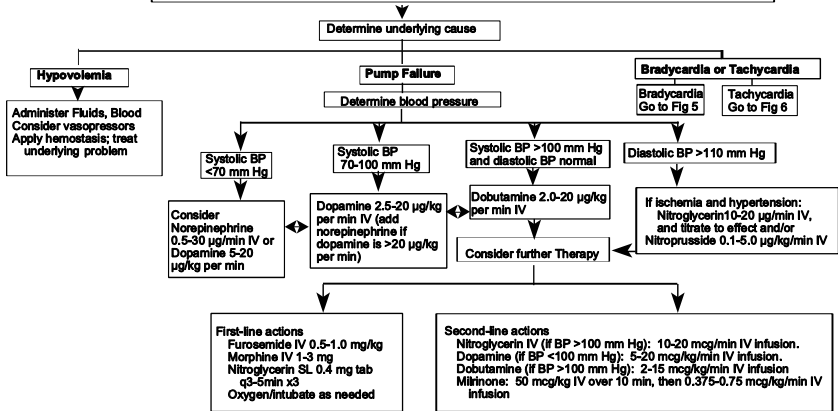


Fig 8 - Hypotension, Shock, and Acute Pulmonary Edema.